

California Computer Products, Inc.



305 N. Muller St., Anaheim, Calif. 92803

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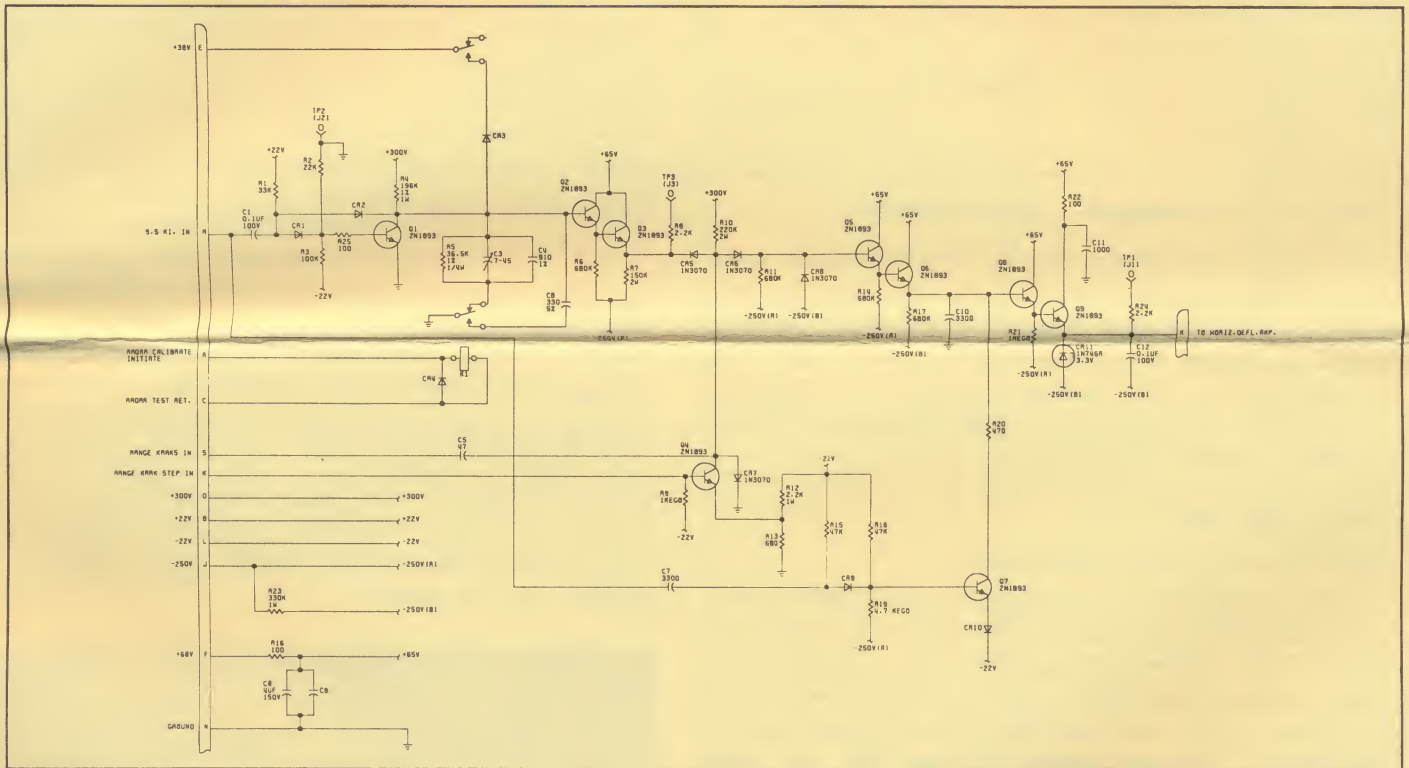
BOX 32

SCHOOLEY, MNTN, NEW JERSEY 07870

DIGITAL PLOTTING NEWSLETTER

CALIFORNIA COMPUTER PRODUCTS, INC. — 305 Muller Avenue, Anaheim, California 92803

SPECIAL EDITION



TIME-SHARING SYSTEM AIDS TECHNICAL DOCUMENTATION

The System Effectiveness Laboratory of Technical Operations, Inc. in Anaheim, California, uses a remote time-sharing terminal for a variety of applications related to documentation of technical data. To help implement its Integrated Maintenance Manual program, the Laboratory recently added a CalComp Model 210 remote plotting system to the terminal. The graphic system is used primarily for automatic drawing of electronic schematic diagrams for the Integrated Maintenance Manuals, and to provide an engineering drafting service to clients. Special software developed by the company makes it easy to incorporate changes in the schematics and to revise the layout, functional groupings, and signal paths for maximum readability and understanding. The IMM concept developed by Technical Operations is a new approach to technical documentation, with emphasis

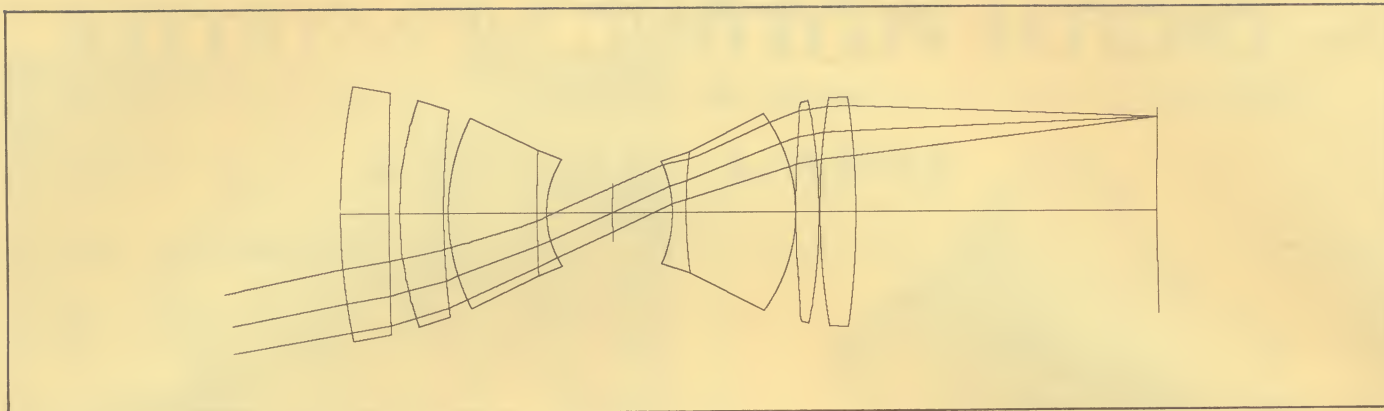
on the needs of those who must maintain complex equipment. Originally conceived for military and governmental applications, the Integrated Maintenance Manual concept is being extended to technical documentation for commercial and industrial applications as well.

CALCOMP 840 SCHEDULED FOR FIRST SHOWING AT FJCC

Star attraction in the CalComp booth at the 1968 Fall Joint Computer Conference in San Francisco this December will be the new Model 840 Stored Program CRT/Microfilm Plotting System. The new electronic plotting system incorporates features of the CalComp 835 and a stored-program Honeywell 516 computer. The 840 provides automatic microfilm recording in either 35mm or 16mm format. Included with the system is basic software which allows use of

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VISIT CALCOMP AT THE
1968 FALL JOINT COMPUTER CONFERENCE
 BROOKS HALL - CIVIC CENTER - SAN FRANCISCO - DECEMBER 9, 10, 11



PLOTTER SPEEDS LENS DESIGN

The sample plot shown here is a cross-sectional view of a lens designed with the aid of a time-sharing computer and a CalComp Model 210/565 remote digital plotting system. The plot also shows several light-ray paths traced by the computer. The lens was designed by Dr. Eric G. Rawson of Bell Telephone Laboratories in Murray Hill, N.J.

WHAT'S NEW? . . .

4-Section Strippable Film Cutter

A new accessory for the CalComp large flatbed plotters (Model 618 and 718) is now available. The Strippable Film Cutter System, Part No. 10114-101 is a four-position directional cutting tool designed for use with strippable drafting films. The cutting edge is a "clamshell" diamond scribe for long life. The four blades are aligned at 0°-180°, 45°-225°, 90°-270° and 135°-315°. Selection of any one of the four is accomplished automatically under program control. A single-section Strippable Film Cutter is also available for use on the small flatbed plotters and all drum plotters (Part No. 10113-101), as announced in the March/April 1968 issue of DPN.

Model 840 Plotting System

CalComp's new Model 840 Stored Program CRT/Microfilm plotting system consists of an electronic plotter similar to the Model 835, plus a Honeywell 516 stored-program computer. Available with either a 16mm or 35mm microfilm camera, or both, the system includes basic software for conversion of computer tapes formatted for a line printer. When used as a high-speed printer, the 840 prints at an average rate of 1200 lines per minute. The system will have its first public showing at the Fall Joint Computer Conference in San Francisco, December 9 through 11.

On-Line Plotting with IBM 1130

Our July/August issue announced the availability of a new on-line interface for use with the IBM 1130 computer and any CalComp 600 or 700 series plot-

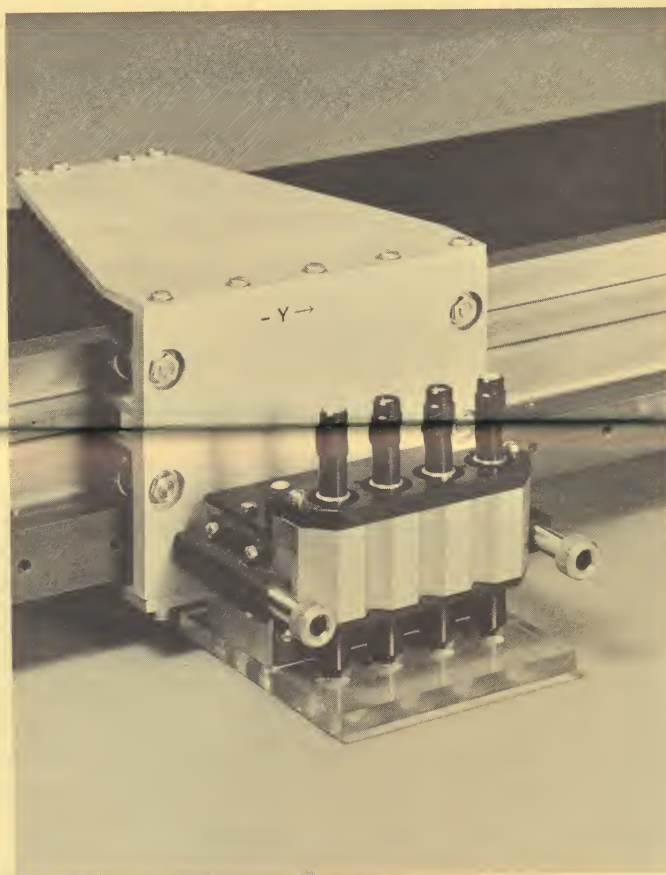
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CALCOMP 840 AT FJCC . . .

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computer tapes formatted for a line printer. Used as a high-speed line printer, the 840 can print at an average rate of 1200 lines per minute, each line consisting of 132 characters.

Also on display at FJCC (Brooks Hall, San Francisco Civic Center, December 9, 10 and 11) will be the 54" by 72" CalComp 718 Zip Mode flatbed plotter operating on-line with an IBM 1130, the Model 210 remote time-sharing system, and a Model 763 Zip Mode drum plotter. See you there!



Four-section strippable film cutter for large CalComp flatbed plotters.

PLOTTER PERKS UP PERT SCHEDULING AT LTV

The sample plot shown here is a portion of a PERT network drawn by a CalComp 770/763 Zip Mode plotting system at Ling-Temco-Vought, Inc., Arlington, Texas. The LTV Computer Center currently has two Zip Mode systems in operation. Development of the PERT plotting program was undertaken because of the extensive use of this type of chart by LTV's Systems Management Services. The program was written to duplicate as nearly as possible the hand-drawn networks produced at LTV, and for that reason no X-Y coordinates are required. Input data to the program consists of a punched card for an activity, containing predecessor event, successor event, duration, completion date, and identification label. Positioning of indicated activities, routing of paths, vertical constraints, and coordination with the calendar are all accomplished automatically. LTV reports that the savings in manhours over the time required to produce handdrawn PERT networks is substantial. The special software for PERT plotting was developed by William D. Gattis and Robert L. Patton of the Scientific Programming Department, LTV Computer Center.

NEW CALCOMP SALES OFFICES

Following is a list of new CalComp sales offices in the United States; see Bulletin 130 for complete listing.

Hawaii—2003 Kalia Road

Honolulu, Hawaii 96815
(808) 949-7296

Florida—Suite 105—7000 Lake Ellenor Drive

Orland, Florida 32809
(305) 851-1580

New Orleans—Suite 213—3949 Veterans Highway

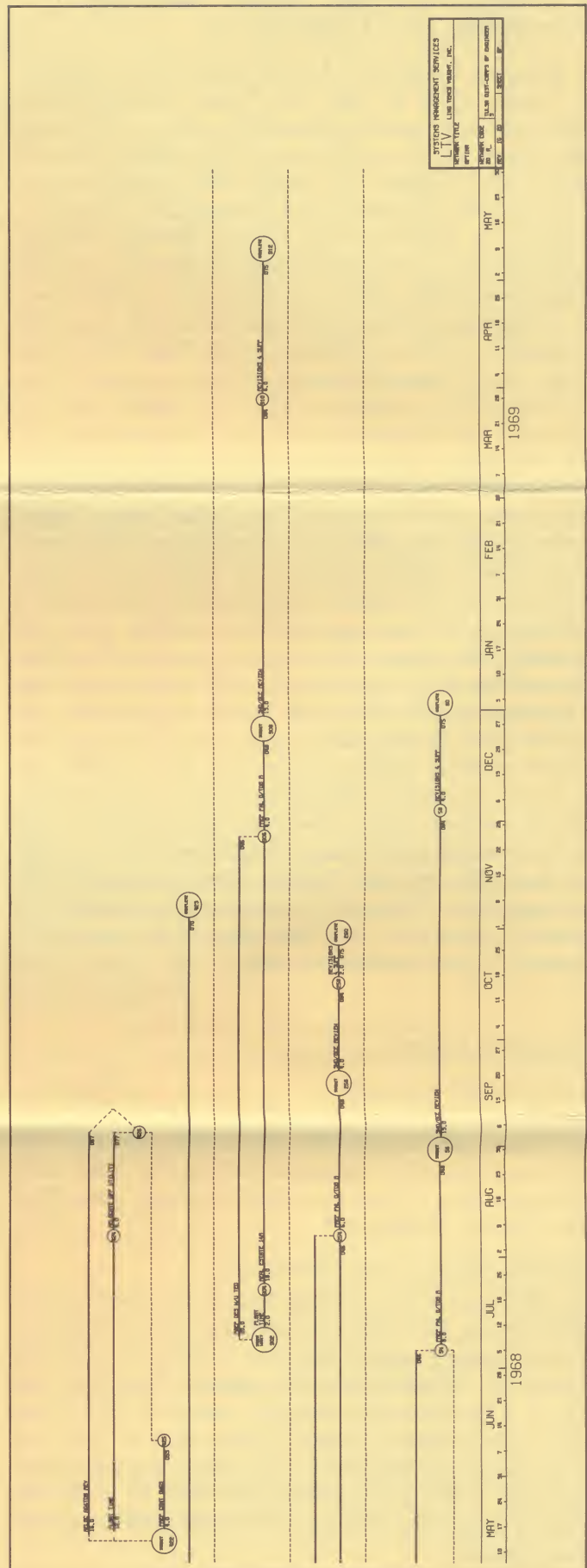
Metairie, Louisiana 70002
(504) 888-4655

St. Louis—25 South Bemiston

St. Louis, Missouri 63105
(314) 725-2996

TIME-SHARING SEMINAR SLATED

Advanced Management Research, Inc. is conducting a seminar on Computer Time-Sharing at the St. Moritz Hotel, New York City, November 18-20. Program chairman for the seminar is Dr. Robert M. Richardson, Director of Business Planning for CalComp. Also featured in the three-day program will be a demonstration of the CalComp 210 remote time-sharing plotting system.



FLATBED PLOTTER HELPS REDUCE TWO-YEAR DATA BACKLOG

A two-year backlog of hydrographic data obtained by survey ships of the U.S. Naval Oceanographic office was processed in six months, using a CalComp 502 flatbed plotter operating off-line with a Control Data 3100 computer. In a report titled *Hydrographic Survey Data Reduction by Automatic Plotter*, Anthony A. Brown of the Coastal Surveys Branch reports that the programs developed for this purpose will substantially reduce the time and cost involved in constructing field position plotting sheets, grid and projection layouts, and many other time-consuming tasks which formerly had to be done by hand. The CalComp 502 is capable of plotting a ship's track at the rate of 1750 positions per hour. Graticule layouts that formerly required four hours of exacting effort by an experienced cartographer can now be drawn by the plotter in 15 minutes. The plotter output for a completed survey, called a "Smooth Sheet" (see sample), shows depth soundings at selected intervals, depth curves, tick marks, titles, and other information of interest to the users. Another plotter program produces the field plotting sheets used to determine the survey ship's position at each data point. The "Azimuth Array" (see sample) is a projection of radial lines from established observation points. Other plotting sheets utilize data from electronic navigation systems. Additional applications are being studied which show promise for combining the plotter on-line with data acquisition system to speed up the collection and display processes aboard the survey ships. These new programs are expected to greatly reduce the office time required to process the results of hydrographic surveys.

WHAT'S NEW . . .

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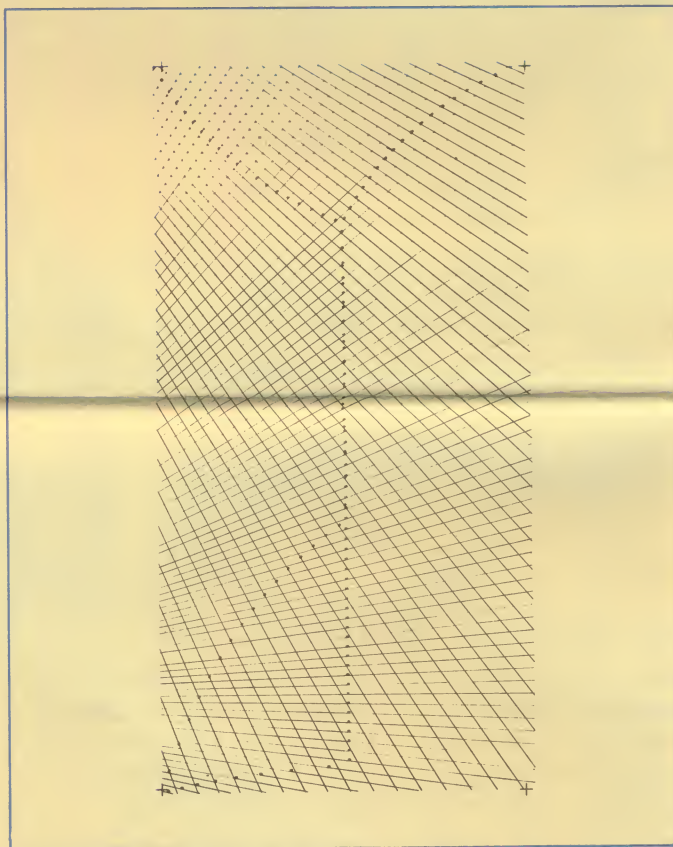
ter. This interface module, designated the CalComp J-1130, is also compatible for on-line operation of CalComp Model 835 electronic plotter. For full details on the J-1130, contact your local CalComp sales office or write for Bulletin 242.

Spooling Software for System/360

In addition to basic software for on-line plotting with IBM System/360 and any CalComp plotter, CalComp has available a special software package for SPOOL operation (Simultaneous Peripheral Operation On-Line). This allows the program output to be written onto intermediate storage (drum, disc or tape) at high speed and then later fed to the on-line plotter. Spooling software is compatible with all IBM/360 models using OS, TOS, and DOS with multiprogramming option.

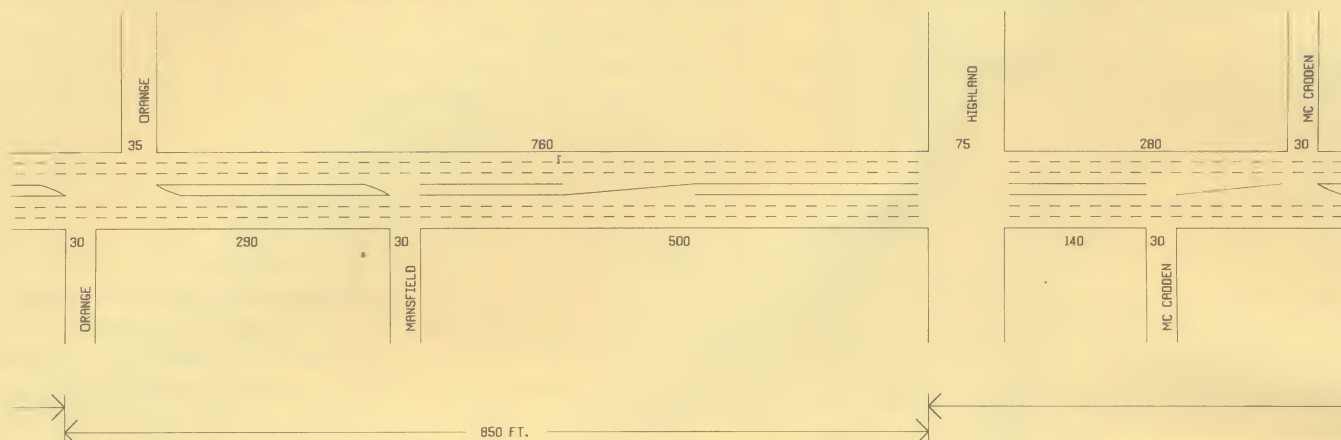


"Smooth Sheet," sample of plotter output from hydrographic survey by U.S. Naval Oceanographic office.



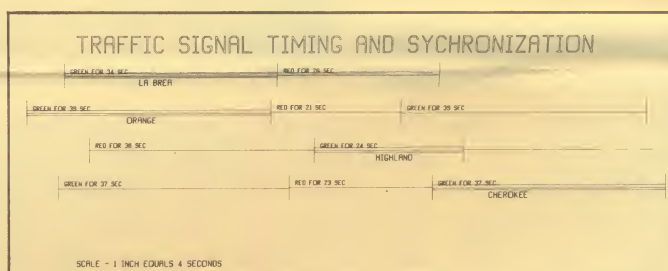
"Azimuth Array," typical plotter chart used in field plotting of survey ship position.

SUNSET BLVD FROM LA BREA TO CHEROKEE



PLOTTER GRAPHS HELP JUSTICE TRIUMPH

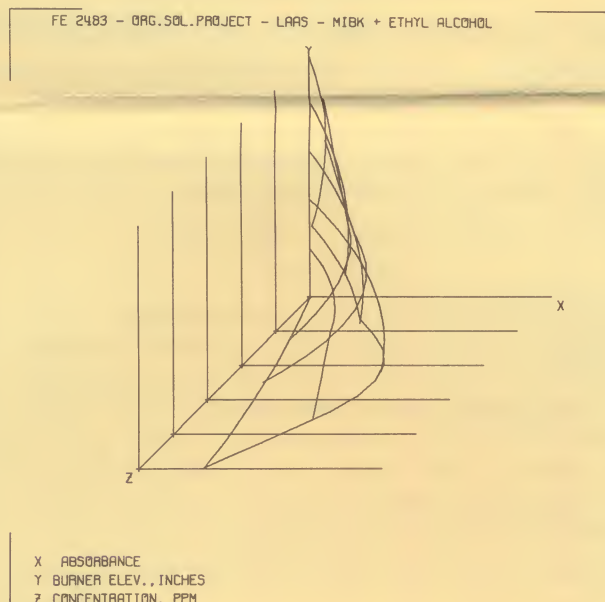
A young Southern California business executive recently used a computer and a CalComp plotter to assist in his courtroom defense against a traffic citation for speeding. Convinced that he had been unjustly accused, the young man (who has asked that his name be withheld from publication) set to work gathering the necessary data on distances between traffic signals, the duration of the green and red lights for each signal, and the travel time between signals for various rates of speed. He then programmed the computer and plotter to produce a street map and a set of timing and velocity charts to establish his contention that he could not possibly have been traveling at the speed for which he was cited at that particular time and place. Confronted with this well-documented and irrefutable evidence, the judge forthwith dismissed the case.

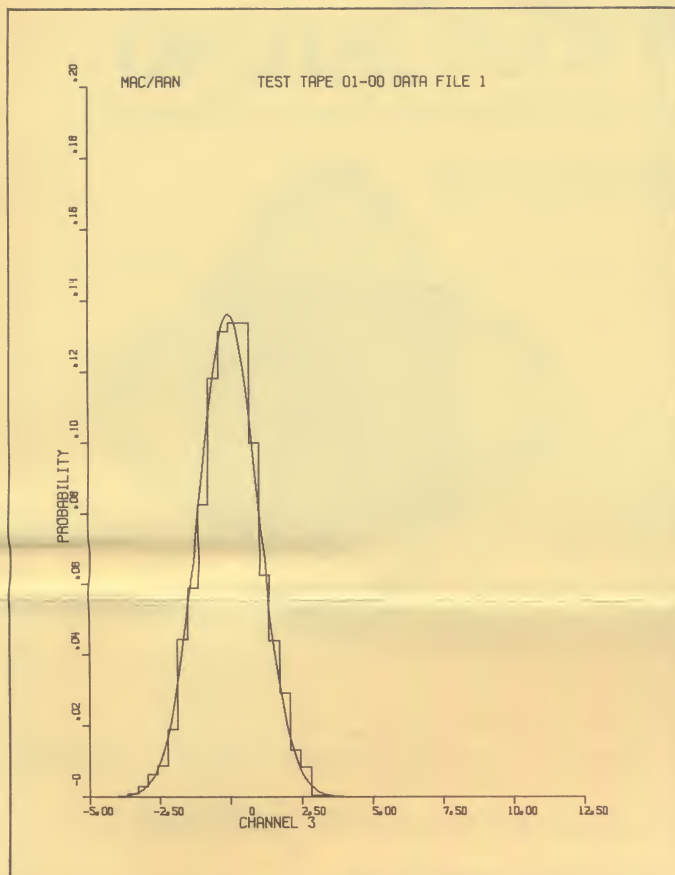


THREE-DIMENSIONAL CHARTS FOR FLAME-PHOTOMETRY ANALYSIS

During the evaluation of new instruments using atomic-absorption flame photometry, and in the development of methods of analysis involving this technique, Beckman Instruments, Inc. of Fullerton, California found that a method was needed for rapid evaluation of test results. Two of the outstanding advantages of flame methods are the short time needed to prepare sample solutions, and to obtain the readings with the instruments. However, these advantages were offset in the manual procedures required to calculate averages of several readings, transform the averages to concentration-related values, interpolate working curves, and calculate sensitivity values. This type of problem is common to many research laboratories in which hundreds or even thousands of samples need to be analyzed each day. Beckman solved the problem by developing computer programs for processing the test data and tabulating final results, and for producing plotted points and working curves on a CalComp 470/565 digital plotting system. The computer system is an IBM/360 equipped with an IBM 2250 display unit which allows direct communication with the computer. This allows the analyst to make decisions and alter the data or the presentation on the basis of the graphic display on the screen of the 2250. For hard copy records of the displays, the CalComp plotter and SCOPLT software are used.

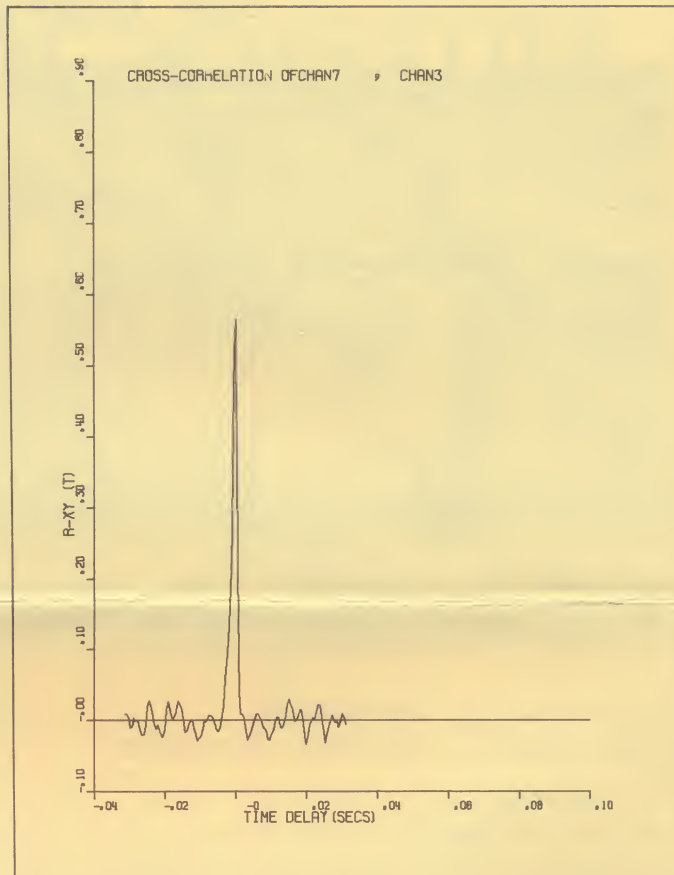
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MAC/RAN SYSTEM FOR RANDOM DATA ANALYSIS

Measurement Analysis Corporation of Los Angeles has developed a package of computer programs for comprehensive analysis of time series (random) data. This type of data occurs routinely in many applications such as vibration, acoustics, oceanography, seismology, structural dynamics, and biomedical research. Designated the MAC/RAN System, the package is available on long-term lease and consists of a set of seven independent computational modules designed around a system executive or monitor. An eighth module, the *Printer and Plotter Output Processor*, pro-



vides both printed and plotted hard copy output, the latter using an off-line CalComp system. The sample plot at left is a typical output plot from the Amplitude Statistics Processor, one of the computational modules, which provides estimates of the probability density and probability distribution functions of a given data sequence. The plot at right shows a cross-correlation between two channels, typical output from the Time and Frequency Analysis Processor, which performs a spectral analysis on one or more data sequences. For complete details on MAC/RAN, contact Measurement Analysis Corporation, 10960 Santa Monica Boulevard, Los Angeles, California 90025.

PLOT TIPS . . .

One of the most frequent causes of trouble with an off-line plotting system is also the easiest to fix. The trouble is caused not by defective software or hardware, but by defective magnetic tapes. For proper operation of the plotting system, the plot tapes *must* be of high quality to begin with, and they must be kept completely free of dirt, loose oxide, or other foreign materials. A poor quality tape may have wide variations in magnetized strength, and produce a corresponding fluctuation in read amplifier output signals. Dirt or excess oxide on the tape can cause

the tape to be displaced from the read head, with a resultant loss in signal. If you have any doubts about the condition of the tapes you plan to use for plotting, have them cleaned and certified by an organization specializing in this type of service. And — equally important — make certain your computer tape units and CalComp off-line tape unit are properly maintained. The read heads should be cleaned after every eight hours of operation. Use rubbing alcohol, Freon, or a solution of 80% denatured alcohol and 20% Windex. The latter can be used for cleaning all equipment except painted surfaces.

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